CLAIMS

1. In a wireless, mobile access digital data network having a plurality of mobile and fixed nodes, and a plurality of agents/routers for interfacing said mobile nodes with said data network, a method of communicating data between a mobile node and a mobile or fixed correspondent node in said network, comprising:

establishing a communication link between said mobile node and said network via a first one of said agents/routers;

establishing a communication link between said correspondent node and said network via a second one of said agents/routers;

establishing data communications between said mobile node and said correspondent node via a first data route including said first and second agents/routers;

predicting the future location of said mobile node relative to said first agent/router and a third agent/router;

determining based on said prediction when said communication link between said mobile node and said network should be transferred from said first agent/router to said third agent/router;

establishing a second data route for data communications between said mobile node and said correspondent node including said second and third agents/routers; and

transferring said communication link between said mobile node and said network from said first agent/router to said third agent/router.

2. The method of claim 1 wherein predicting the future location of said mobile node comprises using deterministic prediction.

3. The method of claim 1 wherein predicting the future location of said mobile node comprises using stochastic prediction.

4. The method of claim 1 wherein predicting the future location of said mobile node comprises using adaptive prediction.

5. The method of claim 1 wherein predicting the future location of said mobile node comprises transparently predicting the future location of said mobile node using a selected variable in the L3 network layer.

6. The method of claim 5 wherein said variable is packet latency.

7. The method of claim 1 wherein said data communication between said mobile node and said correspondent node is real-time interactive multimedia communication.

8. The method of claim 7 wherein said real-time interactive multimedia communication between said mobile node and said correspondent node is voice over IP (VoIP) data communication.

9. The method of claim 1 wherein said data network is a third or beyond generation all-IP, wireless, mobile access IP-based data network conforming to IMT-2000.

10. The method of claim 1 wherein said data network is a third or beyond generation all-IP, wireless, mobile access IP-based data network conforming to Mobile IP version 4.

11. The method of claim 1 wherein said data network is a third generation, wireless, mobile access IP-based data network conforming to Mobile IP version 6.

12. In a third or beyond generation all-IP, wireless, mobile access, IP-based data network having a core network, a mobile node, a fixed or mobile correspondent node, and a mobile IP backbone comprising a plurality of routers/agents for interfacing said mobile nodes to the core network, a method of dynamically changing the network data routing between said mobile node and said correspondent node, comprising:

predicting the mobility of said mobile node relative to a first fixed agent or router comprising a network connection for said mobile node;

comparing said predicted mobility to a predetermined threshold value;

if said predicted mobility meets or exceeds said threshold value,

locating a second fixed agent or router;

pre-registering said mobile node with said second fixed agent or router;

pre-establishing a new network data route between said mobile node and said correspondent node via said second fixed agent or router;

then switching said mobile node's network connection from said first fixed agent or router to said second fixed agent or router.

13. A wireless, mobile node device for use in a third or beyond generation all-IP, wireless, mobile access, IP-based data network, comprising:

electronic circuitry and software for establishing a network connection and communicating data over said network via a first fixed node of said network;

means for predicting the mobility of said mobile node with respect to said first fixed node;

means for comparing said predicted mobility with a new value discovered; and

means for taking a desired action if said predicted mobility meets or exceeds said discovered new value.

14. The device of claim 13 wherein said means for taking a desired action comprises:

means for locating a second fixed agent or router;

means for pre-registering said mobile node with said second fixed agent or router;

means for pre-establishing a new direct network data route between said mobile node and said correspondent node via said second fixed agent or router; and

means for switching said mobile node's network connection from said first fixed agent or router to said second fixed agent or router.